

## CLAIMS

The invention claimed is:

1. A system for establishing a connection through a carrier virtual network, the carrier virtual network comprising layer one resources dedicated from at least one dedicating telecommunication network to the carrier virtual network that may be accessed by at least one accessing telecommunication network, the system comprising:

a carrier virtual network manager, comprising:

a database of connection information regarding the layer one resources dedicated to the carrier virtual network, the connection information describing how a telecommunication connection may be established using the layer one resources dedicated to the carrier virtual network;

a database of latency information for the layer one resources dedicated to the carrier virtual network, the latency information describing the latency associated with each layer one resources dedicated to the carrier virtual network;

a routing system to identify possible connections using the layer one resources dedicated to the carrier virtual network that would establish a connection required by a telecommunication order;

a query system to determine the total latency of an identified possible connection and to determine whether the total latency of an identified possible connection exceeds service latency level requirements of the telecommunication order;

a provisioning system to establish connections within the carrier virtual network; and

at least one dedicated connection between the carrier virtual network manager and the manager of each of the at least one dedicating telecommunication network, the at least one dedicated connection being used to transmit latency information and connection information for the layer one resources dedicated to the carrier virtual network from the network system manager to the carrier virtual network manager for inclusion in the database of connection information and the database of latency information.

2. The system of claim 1, further comprising:

a carrier virtual network interface that receives connection information and latency information from the manager of each of the at least one telecommunication network with layer one resources dedicated to the carrier virtual network via the at least one connection and inputs the connection information and the latency information to the carrier virtual network manager for inclusion in the database of connection information and the database of latency information.

3. The system of claim 2, wherein the database of connection information comprises:

information identifying the available layer one resources of the accessing telecommunication network dedicated to the carrier virtual network; and

information identifying the layer one resources dedicated from the at least one dedicating telecommunication network to the carrier virtual network.

4. The system of claim 3, wherein the database of latency information comprises:

latency information for each of the available layer one resources of the accessing telecommunication network; and

latency information for each of the layer one resources dedicated from the at least one dedicating telecommunication network to the carrier virtual network.

5. The system of claim 3, wherein the database of connection information further comprises:

information identifying each of the at least one network connection between the layer one resources of the accessing telecommunication network and the layer one resources dedicated from the at least one dedicating telecommunication network to the carrier virtual network.

6. The system of claim 5, wherein the database of latency information comprises:

latency information for each of the available layer one resources of the accessing telecommunication network;

latency information for each of the layer one resources dedicated from the at least one dedicating telecommunication network to the carrier virtual network; and

latency information for each of the at least one network connection between the layer one resources of the accessing telecommunication network and the layer one resources dedicated from the at least one dedicating telecommunication network to the carrier virtual network.

7. A method for establishing a telecommunication connection through a carrier virtual network within the service level latency requirements of a telecommunication service order, the carrier virtual network comprising layer one resources dedicated from at least one dedicating telecommunication network to the carrier virtual network that may be accessed by another telecommunication network, the method comprising:

maintaining a database of connection information regarding the layer one resources available to the carrier virtual network;

maintaining a database of latency information for the layer one resources available to the carrier virtual network;

receiving connection information for the layer one resources available to the carrier virtual network into the database of connection information;

receiving latency information for the layer one resources available to the carrier virtual network into the database of latency information;

identifying connections using layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified connections meet the latency requirements of the telecommunication service order using the database of latency information; and

provisioning an identified connection that meets the latency requirements of the telecommunication service order.

8. The method for establishing a telecommunication connection of claim 7, wherein maintaining a database of connection information regarding the layer one resources available to the carrier virtual network comprises:

maintaining connection information for the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication network; and

updating the connection information for the layer one resources dedicated to the carrier virtual network when new connection information is received.

9. The method for establishing a telecommunication connection of claim 8, wherein maintaining a database of connection information regarding the layer one resources available to the carrier virtual network further comprises:

maintaining connection information for the layer one resources of the accessing telecommunication network; and

updating the connection information for the layer one resources of the accessing telecommunication network when new connection information is received.

10. The method for establishing a telecommunication connection of claim 8, wherein maintaining a database of latency information for the layer one resources available to the carrier virtual network comprises:

maintaining latency information for the layer one resources dedicated to the carrier virtual network from at least one dedicating telecommunication network; and

updating the latency information for the layer one resources dedicated to the carrier virtual network when new latency information is received.

11. The method of establishing a telecommunication connection of claim 9, wherein maintaining a database of latency information for the layer one resources available to the carrier virtual network comprises:

maintaining latency information for the layer one resources dedicated to the carrier virtual network from at least one dedicating telecommunication network;

maintaining latency information for the layer one resources of the accessing telecommunication network;

updating the latency information for the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication network when new latency information is received; and

updating the latency information for the layer one resources of the accessing telecommunication network when new latency information is received.

12. The method for establishing a telecommunication connection of claim 11, wherein maintaining a database of connection information for the layer one resources available to the carrier virtual network further comprises:

maintaining connection information regarding the network connections between the layer one resources of the accessing telecommunication network and the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication.

13. The method for establishing a telecommunication connection of claim 12, wherein maintaining a database of latency information for the layer one resources available to the carrier virtual network further comprises:

maintaining latency information for network connections between the layer one resources of the accessing telecommunication network and the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication network.

14. The method for establishing a telecommunication connection of claim 7, further comprising:

receiving notice if a provisioned connection is impaired;

identifying alternative connections using the layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified alternative connections meet the service level latency requirements of the telecommunication service order using the database of latency information; and

re-provisioning the impaired connection to one of the identified alternative connections that meet the service level latency requirements of the telecommunication service order.

15. The method for establishing a telecommunication connection of claim 13, further comprising:

receiving notice if a provisioned connection is impaired;

identifying alternative connections using the layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified alternative connections meet the service level latency requirements of the telecommunication service order using the database of latency information; and

re-provisioning the impaired connection to one of the identified alternative connections that meet the service level latency requirements of the telecommunication service order.

16. The method for establishing a telecommunication connection of claim 15, wherein identifying alternative connections occurs prior to provisioning an identified connection.

17. The method for establishing a telecommunication connection of claim 16, wherein determining which of the identified alternative connections meet the latency requirements occurs prior to provisioning an identified connection.

18. The method for establishing a telecommunication connection of claim 15, wherein identifying alternative connections occurs simultaneous with identifying connections.

19. The method for establishing a telecommunication connection of claim 18, wherein determining which of the identified alternative connections meet the latency requirements occurs simultaneous with determining which of the identified connections meet the latency requirements.



20. At least one machine readable media containing machine readable code embodied thereon for causing a carrier virtual network system to perform a method for establishing a telecommunication connection through a carrier virtual network within the service level latency requirements of a telecommunication service order, the carrier virtual network comprising layer one resources dedicated from at least one dedicating telecommunication network that may be accessed by another telecommunication network, the method comprising:

maintaining a database of connection information regarding the layer one resources available to the carrier virtual network;

maintaining a database of latency information for the layer one resources available to the carrier virtual network;

receiving connection information for the layer one resources available to the carrier virtual network into the database of connection information;

receiving latency information or the layer one resources available to the carrier virtual network into the database of latency information;

identifying connections using layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified connections meet the latency requirements of the telecommunication service order using the database of latency information; and

provisioning an identified connection that meets the latency requirements of the telecommunication service order.

21. The at least one machine readable media of claim 20, wherein maintaining a database of connection information regarding the layer one resources available to the carrier virtual network comprises:

maintaining connection information for the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication network; and

updating the connection information for the layer one resources dedicated to the carrier virtual network when new connection information is received.

22. The at least one machine readable media of claim 21, wherein maintaining a database of connection information regarding the layer one resources available to the carrier virtual network further comprises:

maintaining connection information for the layer one resources of the accessing telecommunication network; and

updating the connection information for the layer one resources of the accessing telecommunication network when new connection information is received.

23. The at least one machine readable media of claim 21, wherein maintaining a database of latency information for the layer one resources available to the carrier virtual network comprises:

maintaining latency information for the layer one resources dedicated to the carrier virtual network from at least one dedicating telecommunication network; and

updating the latency information for the layer one resources dedicated to the carrier virtual network when new latency information is received.

24. The at least one machine readable media of claim 23, wherein maintaining a database of connection information for the layer one resources available to the carrier virtual network further comprises:

maintaining connection information regarding the network connections between the layer one resources of the accessing telecommunication network and the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication.

25. The at least one machine readable media of claim 24, wherein maintaining a database of latency information for the layer one resources available to the carrier virtual network further comprises:

maintaining latency information for network connections between the layer one resources of the accessing telecommunication network and the layer one resources dedicated to the carrier virtual network from the at least one dedicating telecommunication network.

26. The at least one machine readable media of claim 25, the method further comprising:

receiving notice if a provisioned connection is impaired;

identifying alternative connections using the layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified alternative connections meet the service level latency requirements of the telecommunication service order using the database of latency information; and

re-provisioning the impaired connection to one of the identified alternative connections that meet the service level latency requirements of the telecommunication service order.

27. The at least one machine readable media of claim 26, wherein identifying alternative connections occurs prior to provisioning an identified connection.

28. The at least one machine readable media of claim 27, wherein determining which of the identified alternative connections meet the latency requirements occurs prior to provisioning an identified connection.

29. The at least one machine readable media of claim 26, wherein identifying alternative connections occurs simultaneous with identifying connections.

30. The at least one machine readable media of claim 29, wherein determining which of the identified alternative connections meet the latency requirements occurs simultaneous with determining which of the identified connections meet the latency requirements.

31. The at least one machine readable media of claim 20, the method further comprising:

receiving notice if a provisioned connection is impaired;

identifying alternative connections using the layer one resources available to the carrier virtual network that would fulfill the telecommunication service order using the database of connection information;

determining which of the identified alternative connections meet the service level latency requirements of the telecommunication service order using the database of latency information; and

re-provisioning the impaired connection to one of the identified alternative connections that meet the service level latency requirements of the telecommunication service order.